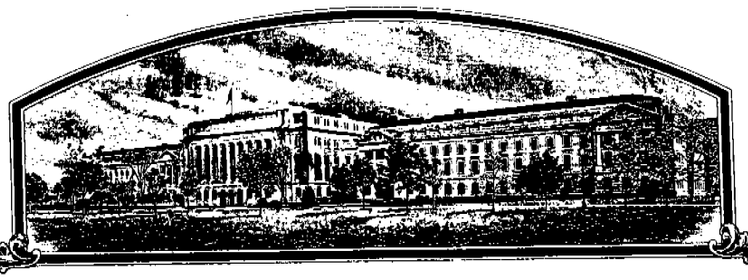

No. 76TQ019

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

World Seeds, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF seventeen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS REQUIRED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'W.S. 25'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of* Washington *this* 16th *day of* May *in the year of our Lord one thousand nine hundred and* seventy-seven

Attest:

Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

Secretary of Agriculture

FORM GR-470 (1-76)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
PLANT VARIETY PROTECTION OFFICE
NATIONAL AGRICULTURAL LIBRARY
BELTSVILLE, MARYLAND 20705

FORM APPROVED OMB NO. 40-R3712

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: *See Reverse.*

1a. TEMPORARY DESIGNATION OF VARIETY	1b. VARIETY NAME	FOR OFFICIAL USE ONLY
MP-25 B	W. S. 25	PV NUMBER 76TQ019
2. KIND NAME: Hard Red Spring Wheat	3. GENUS AND SPECIES NAME: Triticum aestivum L. em. Thell. ssp Vulgare (Vill., Host) MacKey	FILING DATE 9/16/76 — TIME 2:30 P.M.
4. FAMILY NAME (BOTANICAL): Gramineae	5. DATE OF DETERMINATION: October 1971	FEE RECEIVED $ 250.00 $ 250.00 $ 250.00 — DATE

6. NAME OF APPLICANT(S)	7. ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*)	8. TELEPHONE AREA CODE AND NUMBER
WORLD SEEDS, INC.	2605 Oceanside Blvd. Oceanside, California 92054	(714) 757-5647

9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: (*Corporation, partnership, association, etc.*)	10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION	11. DATE OF INCORPORATION
Corporation	Minnesota	Aug. 1, 1972

12. Name and mailing address of applicant representative(s), if any, to serve in this application and receive all papers:

Alfredo Garcia
Vice President - Research
World Seeds, Inc.
2605 Oceanside Blvd.
Oceanside, Ca. 92054

13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

- [X] **13A.** Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*
- [X] **13B.** Exhibit B, Novelty Statement.
- [X] **13C.** Exhibit C, Objective Description of the Variety *(Request form from Plant Variety Protection Office.)*
- [X] **13D.** Exhibit D, Additional Description of the Variety.

14A. Does the applicant(s) specify that seed of this variety be sold by variety name only as a class of certified seed? *(See Section 83(a). (If "Yes," answer 14B and 14C below.)* [X] YES [ ] NO

14B. Does the applicant(s) specify that this variety be limited as to number of generations? [X] YES [ ] NO

14C. If "Yes," to 14B, how many generations of production beyond breeder seed? [X] FOUNDATION [X] REGISTERED [X] CERTIFIED

15. Does the applicant(s) agree to the publication of his/her (their) name(s) and address in the Official Journal? [X] YES [ ] NO

16. The applicant(s) declare(s) that a viable sample of basic seed of this variety will be deposited upon request before issuance of a certificate and will be replenished periodically in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

Sept. 10, 1976 (DATE) — Alfredo Garcia (SIGNATURE OF APPLICANT)

(DATE) — (SIGNATURE OF APPLICANT)

00001

13A. Exhibit A.

(2) Type and Frequency of Variants and Evidence of Stability.

Type and Frequency of Variants.

W. S. 25 has been found to be free of variants during reproduction and multiplication. Any variants found during the above two processes may be explained on the basis of mechanical seed mixtures with other wheats during planting and/or harvesting and also to natural hybrids as a result of field crosses with other wheat varieties.

Evidence of Stability.

The best evidence of the stability of W. S. 25 is given under 13D. (4) of this report. Agronomic characteristics such as heading, physiologic maturity and height are very stable whether the variety is growing under irrigation or under dry-land farming conditions.

Origin and Breeding History of MP-25 B

Origin:

The origin of MP-25 B can be traced back to a cross made during the 1964-1965 growing season at C. I. A. N. O. in Cd. Obregon, Sonora, Mexico.

Breeding History:

1. Parents

MP-25 B originated from a cross between an F6 line from the Rockefeller-Mexican Program and Pembina, a Canadian variety. The cross was made as indicated below:

$$\{\text{F6, Sonora 64} \times (\text{Dwarf Selkirk}^{6}\text{-Dwarf Andes}^{3})\} \times \text{Pembina}$$

a. Brief description of above parents:

Sonora 64. Very early semi-dwarf spring wheat released in Mexico in 1964. The parents are: (Yaktana 54 x Norin 10-Baart) x Yaqui 54^{2}.

Dwarf Selkirk. As we understand it, this line was developed by wheat workers at the University of Manitoba by the Backcross System as indicated below:

$$(\text{Norin 10-Baart}) \times \text{Selkirk}^{6}$$

Tall Straw Andes. Andes, a tall-straw variety, was selected in Colombia from the following cross made in Mexico:

$$(\text{Kentana 48} \times \text{Frontana}) \times \text{Mayo 48}$$

Dwarf Andes. This line was developed in Mexico by the Backcross System as indicated below:

$$(\text{Norin 10} \times \text{Baart}) \times \text{Andes}^{3}$$

Pembina. This tall-straw hard red spring wheat variety was developed in Canada and released for commercial production in 1959. Pembina and Selkirk have very close parents as indicated below:

$$\text{Pembina: Thatcher} \times \{(\text{McMurachy-Exchange}) \times \text{Redman}^{3}\}$$
$$\text{Selkirk:} \quad \{(\text{McMurachy} \times \text{Exchange}) \times \text{Redman}^{3}\}$$

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2. F1 Generation

The cross from which MP-25 B originated was made at C.I.A.N.O., Cd. Obregon, Sonora, Mexico, in 1964-1965. The F1 was planted in the same location during the following growing season of 1965-1966.

3. F2 Generation

This second generation was harvested in bulk in May of 1966. Part of the seed was shipped to Grand Forks, North Dakota, and planted in 1966 at the farm of Mr. Art Greenberg (no longer associated with World Seeds, Inc.). The seed was space-planted in six (6) rows, 20 feet x 22 inches each.

In 1966 World Seeds, Inc. devised a recording system under which we register every cross and every selection or even introductions which we believe may play an important role in the breeding program. Thus, the pedigree for the second generation was recorded in the field book as:

Six Rows Planted	F3, Plants Selected
F2 Bulk: 6W00640	8 (7 discarded; 1 saved)

In the above connotation, 6W stands for both F1 and hexaploid wheat, while 00640 stands for the F2 generation and also for the permanent number assigned to this particular cross. Crosses involving different parents are given different numbers and once a number is given it is not used again in the program even if such cross has been discarded permanently.

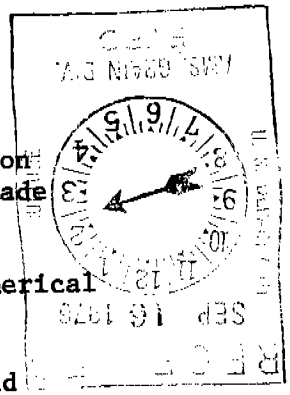
4. F3 Generation

From this generation on we followed the Pedigree Method of selection. Under such a method we select single plants or heads and each one of them is registered in the field books in order to maintain a close pedigree of every line or variety.

As indicated previously, out of the six rows planted in the F2 generation we selected eight (8) F3 single plants, and seven (7) of these were discarded because of poor grain development. The F3 pedigree for the eight (8) plants is indicated below:

INSTRUCTIONS

GENERAL: Send an original copy of the application, exhibits and $250.00 fee to U.S. Dept. of Agriculture, Agricultural Marketing Service, Grain Division, National Agricultural Library, Beltsville, Maryland 20705. (See Section 180.175 of the regulations and rules of practice.) Retain one copy for your files. All items on the face of the form are self-explanatory unless noted below.



ITEM

5 Give the date the applicant determined that he had a new variety based on (1) the definition in Section 41(a) of the Act and (2) the date a decision was made to increase the seed.

13a Give (1), the genealogy, including public and commerical varieties, lines, or clones used, and the breeding method. (2), the details of subsequent stages of selection and multiplication. (3), the type and frequency of variants during reproduction and multiplication and state how these variants may be identified and (4), evidence of stability.

13b Give a summary statement of the variety's novelty. Clearly state how this novel variety may be distinguished from all other varieties in the same crop. If the new variety most closely resembles one or a group of related varieties; (1) identify these varieties and state all differences objectively; (2) Attach statistical data for characters expressed numerically and demonstrate that these differences are significant; and (3) submit, if helpful, seed and plant specimens or photographs of seed and plant comparisons clearly indicating novelty.

13c Fill in the Exhibit C, Objective Description form for all characteristics, for which you have adequate data.

13d Describe any additional characteristics that are not described, or whose description cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the description of characteristics that are difficult to describe; such as; plant habit, plant color, disease resistance, etc.

14A If "YES" is specified (seed of this variety be sold by variety name only as a class of certified seed) the applicant may NOT reverse his affirmative decision after the variety has either been sold and so labeled or published or the certificate has been issued. However, if the applicant specifies "NO", he may change his choice. (See Section 180.15 of the Regulations and Rules of Practice.)

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	F4, Plants Selected
F3 Pedigree, 6W00640-21	Discarded as F3
" -22	Discarded as F3
" -23	Discarded as F3
" -24	Discarded as F3
" -25	Discarded as F3
MP-25 B, " -26	10, Saved
" -27	Discarded as F3
" -28	Discarded as F3

The constand number "2" in the above pedigree will always precede all selections made in Grand Forks or St. Thomas, North Dakota.

Seeds from the single F3 plant were planted in six rows in Salinas, California, in 1966-1967. Seeds were spaced out in rows 10 feet long and 12 inches wide each.

Comment:

From the breeding point of view, it seems interesting to observe that MP-25 B originated from a single F3 plant selected from the F2 generation. We still maintain hundreds of sister lines from such selection, and we have observed that most of them are very resistant to races of leaf and stem rusts now prevalent in North America. It is a pity that we did not have a larger F2 population of such an interesting cross.

5. F4 Generation

We selected 10 individual F4 plants out of the F3 population. Seed from each plant was planted in Gonzalez, California, in 1967-1968. From each plant we seeded two rows, 10 feet long by 12 inches wide each.

	F5, Plants Selected
F4 Pedigree, 6W00640-26-11	Three
" -12	None
" -13	None
" -14	None
" -15	None
MP-25 B, " -16	Two
" -17	One
" -18	Three
" -19	Three
" -110	Two
Total	Fourteen

In the above pedigree the constant number "1" will always precede all selections made in California. The particular plants from which further selections were made are indicated in the last column.

6. F5 Generation

From the F4 generation we selected a total of fourteen (14) F5 single plants. Since we are only concerned with Plant 26-16, we will not indicate the pedigrees for the rest of the selections.

	F6, Plants Selected
F5 Pedigree, 6W00640-26-16-11	None
MP-25 B, " -12	Ten

Plants 11 and 12 were planted in Grand Forks, North Dakota, in 1969. Each plant was seeded in four rows, 22 feet long by 22 inches wide each. Approximately 70 seeds were planted in each row. As indicated in the last column, no further selections were made from Plant 11 and 10 plants were selected from Plant 12.

7. F6 Generation

Out of the 10 individual F6 selections made from the F5 generation, three were discarded because of poor grain development, and the rest were planted under irrigation in Holtville, California, in 1969-1970. From each plant we planted three rows and 80 seeds per row. Rows were 20 feet long by 14 inches wide each. The pedigree for the seven plants that were saved is indicated below:

		F7, Plants Selected
F6 Pedigree, MP-25 B,	6W00640-26-16-12-21	Six
	" -22	None
	" -23	Four
	" -24	None
	" -25	Three
	" -26	None
	" -27	Four

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8. F7 Generation

As indicated in the previous pedigree, six individual F7 plants were selected from the three rows pertaining to MP-25 B. These six plants were planted in Grand Forks, North Dakota, in 1970. From each plant we seeded four rows, placing approximately 80 seeds per row. Individual rows were 20 feet long and 22 inches wide each. The pedigree for the six plants was recorded in the field book as follows:

F7 Pedigree,	F8, Plants Selected	F8, Four Rows Bulked
6W00640-26-16-12-21-11	Three	Yes
" -12	None	No
" -13	Two	Yes
MP-25 B, " -14	Two	Yes
6W00640-26-16-12-21-15	One	Yes
" -16	None	No

9. F8 Bulk Generation

The F8 generation resulted from bulking four rows of the F7 generation planted in Grand Forks, North Dakota, in 1970 as indicated previously. The four rows were homozygous for height, maturity and rust reactions. Before bulking the four rows we selected two individual plants which are being kept separately as MP-25 B sibs and are not reflected in the final pedigree of MP-25 B which has been recorded as follows:

F8 Bulk, 6W00640-26-16-12-21-14-2B,

where the letter "B" stands for Bulk.

a. Using the F8 B seed, preliminary yield trials were conducted in Holtville, California, in 1970-1971 and in Grand Forks, North Dakota, in 1971. The results of these and additional trials are presented in the section dealing with yield information.

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Summary of Breeding History[1]

Parents: $\left\{F6, \text{Sonora } 64 \times (D. \text{Selkirk}^{6}\text{-}D. \text{Andes}^{3})\right\} \times$ Pembina

Pedigree: F8 B, 6W00640-26-16-12-21-14-2B

Generation	Planted at:	Generation Harvested	Year	Quality Evaluation
F1	C. I. A. N. O., 1965-1966	F2	1966	None
F2 Bulk	Grand Forks, North Dakota, 1966	F3	1966	None
F3	Salinas, California, 1966-1967	F4	1967	None
F4	Gonzalez, California, 1967-1968	F5	1968	None
F5	Grand Forks, North Dakota, 1969	F6	1969	None
F6	Holtville, California, 1969-1970	F7	1970	None
F7	Grand Forks, North Dakota, 1970	F8 Bulk	1970	None
F8 B	Holtville, California, 1970-1971	F8 B	1970	None
	Grand Forks, North Dakota, 1971, Preliminary Yield Trials	F8 B	1971	Preliminary

(1) In the parents, "D" stands for Dwarf; in the pedigree, "B" stands for Bulk.

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B

Information to Assist Field Inspectors

MP-25 B is most similar to Profit 75 than any other spring wheat variety now grown in the United States. Their following contrasting characters are being grouped under two classes to facilitate their identification:

Field Identification

Character		MP-25 B	Profit 75
Awnedness:			
Awned; average of extreme lengths		58 mm.	76 mm.
Glume Shoulder:			
Shape		Elevated	Square to Elevated
Beak:			
Length, mm.,	Maximum	4.5	10.0
	Average	3.6	6.0
	Minimum	3.0	5.0
Stems:			
Anthocyanin		Present (in 1% of plants and in the upper portion of last internode)	Absent

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B

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Greenhouse Identification

Infection types produced by five physiologic races of stem rust, Puccinia graminis var. tritici on MP-25 B and Profit 75.(1)

Variety	Physiologic Races of Stem Rust(2)				
	HFC	TMR	TDM	SBC	QTH
MP-25 B	2	;	2	2	1
Profit 75	;	2	;	;	2

(1) Data taken from the information on "Seedling Reaction" presented elsewhere in this report.

(2) Infection types:

; = Highly Resistant - No uredia present, but hypersensitive flecks can be seen.

1 = Very Resistant - Minute uredia present, surrounded by distinct necrotic areas.

2 = Moderately Resistant - Small to medium uredia, generally in green tissue, surrounded by a distinct chlorotic or necrotic border.

Reference Consulted:

Stakman, E. C., D. M. Stewart, W. Q. Loegering. Identification of Physiologic Races of Puccinia graminis var. tritici. U.S.D.A. Agr. Res. Ser. E617 (Revised 1962).

FORM APPROVED. OMB NO. 40-R3712

FORM GR-470-6 (2-15-73)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

EXHIBIT C (Wheat)

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (*TRITICUM SPP.*)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S)
WORLD SEEDS, INC.

ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code)
2605 Oceanside Blvd.
Oceanside, CA 92054

FOR OFFICIAL USE ONLY
PVPO NUMBER 76TQ019
VARIETY NAME OR TEMPORARY DESIGNATION
W.S. 25

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. KIND:
[1] 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:
[1] 1 = SPRING 2 = WINTER 3 = OTHER (Specify) _____
[2] 1 = SOFT 2 = HARD 3 = OTHER (Specify) _____
[2] 1 = WHITE 2 = RED 3 = OTHER (Specify) _____

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:
[0][4][5] FIRST FLOWERING
[0][5][0] LAST FLOWERING
Under Grand Forks, N.D., conditions

4. MATURITY (50% Flowering):
[ ][ ] NO. OF DAYS *EARLIER* THAN .....
[ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS
[0][2] NO. OF DAYS *LATER* THAN .....
[3] See Note under #3.

5. PLANT HEIGHT (From soil level to top of head):
[0][7][2] CM. HIGH
[ ][ ] CM. TALLER THAN .....
[ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS
[1][5] CM. SHORTER THAN .....
[3]

6. PLANT COLOR AT BOOTING (See reverse):
[2] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHER COLOR:
[1] 1 = YELLOW 2 = PURPLE

8. STEM: See Footnote
[1] Anthocyanin: 1 = ABSENT 2 = PRESENT
[2] Waxy bloom: 1 = ABSENT 2 = PRESENT
[2] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT
[1] Internodes: 1 = HOLLOW 2 = SOLID
[0][4] NO. OF NODES (Originating from node above ground)
[0][9] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:
[1] Anthocyanin: 1 = ABSENT 2 = PRESENT
[1] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:
[3] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER (Specify): Semi-erect
[2] Flag leaf: 1 = NOT TWISTED 2 = TWISTED
[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT
[2] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT
[1][6] MM. LEAF WIDTH (First leaf below flag leaf)
[3][1.6] CM. LEAF LENGTH (First leaf below flag leaf):

Footnote on #8 Stem: Random samplings indicate that anthocyanin is present in 1% of the plants. It is generally seen in one or two tillers and in the upper portion of the last internode.

00011
MAR 1 1977

76TQ019

W.S. 25

Botanical Classification of ~~MP-25-B~~ (1)

I. Plant Characters:

1. Maturity: Early
2. Height: Mid-tall
3. Habit of Growth: Spring habit

II. Stem Characters:

1. Color: White
2. Strength: Mid-strong
3. Hollowness: Hollow

III. Spike Characters:

1. Awnedness: Awned, awns white; average of extreme lengths, 58 mm.
2. Shape: Fusiform to Oblong
3. Density: Mid-dense
4. Position: Inclined
5. Shattering: Resistant

IV. Glume Characters (glabrous):

1. Color: White
2. Length: Long
3. Width: Wide

V. Shoulder Characters:

1. Width: Narrow
2. Shape: Elevated

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VI. Beak Characters:

1. Width: Narrow

2. Shape: Acuminate

3. Length in mm: Average, 3.6; Maximum, 4.5; Minimum, 3.0.

VII. Kernel Characters:

1. Color: Red

2. Length: Mid-long

3. Texture: Hard

4. Shape: Oval

VIII. Germ Character:

1. Size: Mid-sized

IX. Crease Characters:

1. Width: Mid-wide

2. Depth: Mid-deep

X. Cheek Character:

1. Shape: Rounded

XI. Brush Characters:

1. Size: Mid-sized

2. Length: Mid-long

3. Collar: Non-collared

---

(1) Reference consulted: BRIGGLE, L. W. and L. P. REITZ, 1963. Classification of Triticum species and of Wheat Varieties Grown in the United States. Technical Bulletin 1278, U. S. D. A.

76TQ019

Agronomic characteristics of MP-25 B and standard spring wheat varieties grown under irrigation and dry-land farming conditions.

Grown Under Irrigation:

Heading, maturity and height of MP-25 B and standard spring wheat varieties grown in Holtville, California, from 1971-1972 through 1974-1975.

Variety	Heading	Physiologic Maturity	Height	
	in Days (1)		Cm.	Inches
MP-25 B	102	144	110	43
Profit 75	102	144	106	42
W. S. 1	123	161	109	43
Anza (2)	107	156	92	36
W. S. 1651	106	152	98	38
Bluebird #2 (2)	100-106	151	64-81	25-32
Cajeme 71 (3)	103	--	70-83	27-33

(1) Both observations were taken when at least 50% of the plants show the indicated characteristics. Heading is taken at the time when the whole spike emerges from the boot. Physiologic Maturity is taken when the peduncles (neck or stem below the spike) turn yellow or lemon color.

(2) Anza and Bluebird #2 were not tested in 1970-1971. Bluebird #2 is segregating for heading and height as well as for seed color.

(3) Tested first time in 1973-1974. It is also segregating for height.

-- = No information available.

Grown on Dry-Land:

Heading and height of MP-25 B and standard spring wheat varieties grown in Grand Forks and St. Thomas, North Dakota.(1)

Variety	Heading In Days(2)	Height Cm.	Height Inches
MP-25 B	45	72	28
Profit 75	45	73	29
W. S. 1651	44	63	25
Era	50	70	28
Red River 68	43	71	28
Waldron	45	87	34
Chris	43	84	33
W. S. 1809	42	61	24
Olaf	50	81	32

(1) See previous Footnote.

(2) Heading figures represent averages from 1971, 1972 and 1974. Height averages are for the same years plus 1975. Figures for Olaf are from 1975 only.

76TQ019.

FORM GR-470-6 (REVERSE) W.S. 25

11. HEAD:

[3] Density: 1 = LAX 2 = DENSE 3=Mid-dense

[1.2] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER (Specify) _____

[4] Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

[1] Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER (Specify): _____

[11.6] CM. LENGTH [15] MM. WIDTH

12. GLUMES AT MATURITY:

[3] Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.)

[3] Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.)

[5] Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE

[3] Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

[1] 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

[1] 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

[3] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

[2] Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

[2] Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

[1] Brush: 1 = NOT COLLARED 2 = COLLARED

[4] Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____

[06.4] MM. LENGTH [03.6] MM. WIDTH [42] GM. PER 1000 SEEDS

17. SEED CREASE:

[2] Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

[2] Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[2] STEM RUST (Races) _____ [2] LEAF RUST (Races) _____ [0] STRIPE RUST (Races) _____ [0] LOOSE SMUT

[0] POWDERY MILDEW [0] BUNT [ ] OTHER (Specify) _____

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[0] SAWFLY [0] APHID (Bydv.) [0] GREEN BUG [0] CEREAL LEAF BEETLE

[ ] OTHER (Specify) _____ HESSIAN FLY RACES: [0] GP [0] A [ ] B [ ] C [0] D [0] E [ ] F [ ] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering		Seed size	
Leaf size		Seed shape	
Leaf color		Coleoptile elongation	
Leaf carriage		Seedling pigmentation	

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

(a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.

(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. *(See attachment.)*

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

00012

76TQ019

Leaf and stem rusts field reactions observed on MP-25 B and standard s
wheat varieties grown in Grand Forks, North Dakota, from 1970 throug
and in Mathis and Beeville, Texas, from 1971-1972 through 1974-1975.

	N O R T H				1
				R U	S T
	L E A F				
Variety	1970	1971	1972	1975	1970
MP-25 B	TMR	0-5MS	TR-5MR-MS	0	0
Profit 75	TMR	0-5S	TR	0	0
W. S. 1	TMR	0-5MS	10MS	5MS-MR	0
W. S. 3	--	--	TR	0	--
Waldron	TS	0	10S	20S-5MS	0
Chris	10S	20S	100S	20S	0
Neepawa	80S	100S	100S	100S	TR
Manitou	80S	100S	100S	100S	0
Era	TS-5MS	5MR-MS	0-5S	80S	0
W. S. 1809	0	5MS	5MS	TS	TR
Leeds	TR-5S	--	5MS	20MS	0
Hercules	10S	--		100S	0

(1) See Code for Leaf and Stem Rust Abbreviations on next page.

(2) Material from Dr. A. P. Roelfs, Research Plant Pathologist, static
Reactions read by A. Garcia and Lucas Reyes. Dr. Roelfs identifie
among the collections of stem rust sent to him from that location.

-- = No information available.

4918 - Buff
5818 - Blue
8818 - Green

76TQ019

Code for Leaf and Stem Rust Abbreviations

SEVERITY OF INFECTION OF RUST:

Given as percent of infection.

0-60		indicates variability in the percent of rust on plants in the row.
TR	=	Trace

RESPONSE:

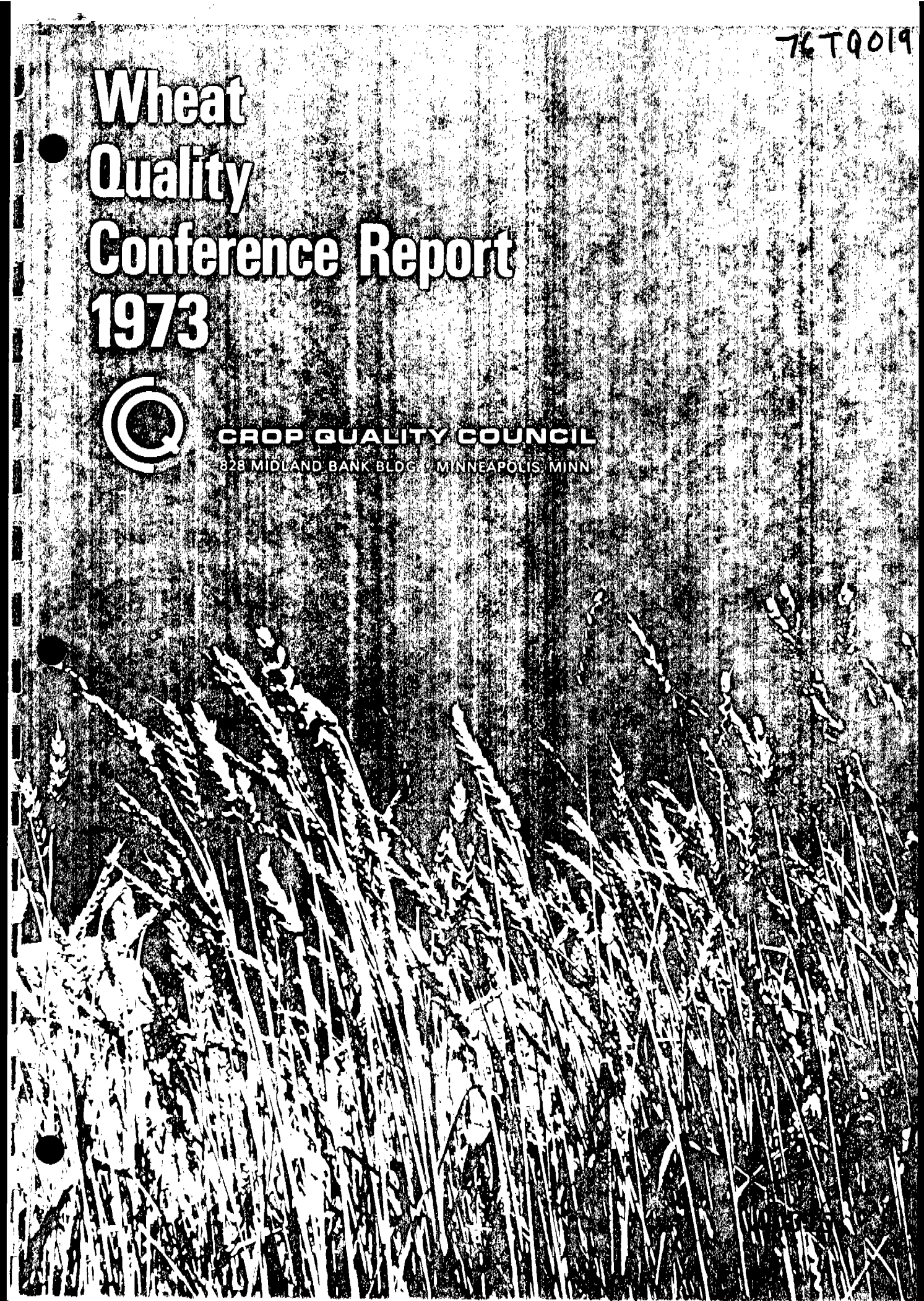
R	=	Resistant
MR	=	Moderately Resistant
S	=	Susceptible
MS	=	Moderately Susceptible
-	=	Range, i.e.: 5R-50S means that there was a range of infection from plant to plant and/or on each plant from 5 percent resistant to 50 percent susceptible type infection.

For Leaf Spots, Black Chaff and Brown Necrosis:

0	=	The most resistant
4	=	The most susceptible

Wheat Quality Conference Report 1973

CROP QUALITY COUNCIL
828 MIDLAND BANK BLDG. / MINNEAPOLIS, MINN.



76TQ019

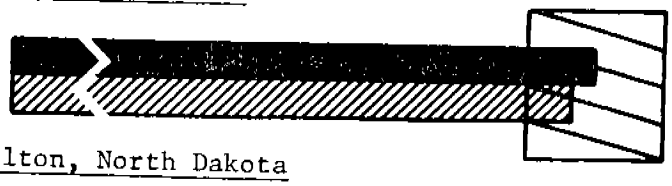
MILLING EVALUATION OF 1973 C.Q.C. SAMPLES

WORLD SEEDS MP-25B

MILLING VALUE

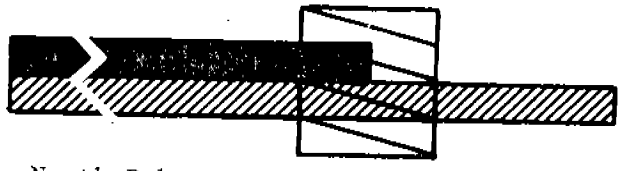
Crookston, Minnesota

Chris - Check	4.86
WS MP-25B	4.85



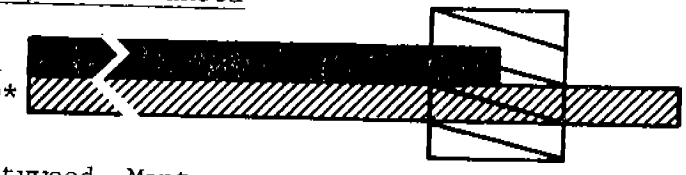
Casselton, North Dakota

Chris - Check	4.76
WS MP-25B	4.87*



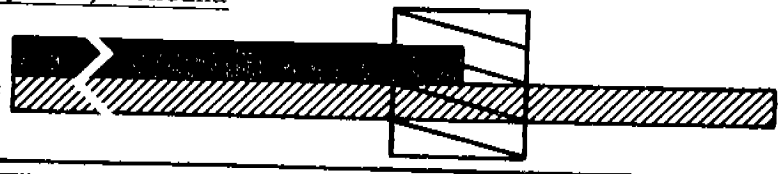
Minot, North Dakota

Chris - Check	4.81
WS MP-25B	4.89*



Plentywood, Montana

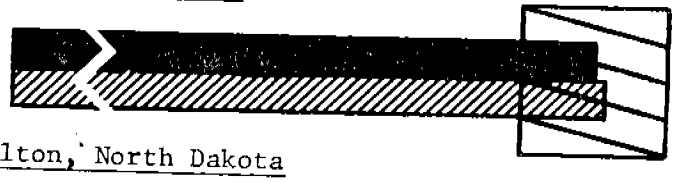
Chris - Check	4.80
WS MP-25B	4.94*



CLASSIFICATION AT 0.46 ASH 1/

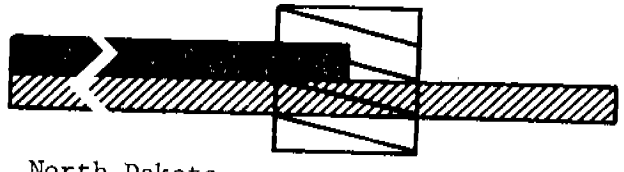
Crookston, Minnesota

Chris - Check	79.2
WS MP-25B	79.3



Casselton, North Dakota

Chris - Check	77.0
WS MP-25B	79.4*

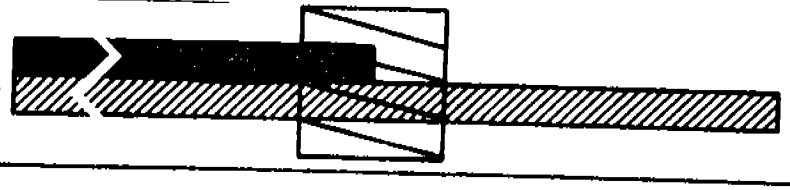


Minot, North Dakota

Chris - Check	79.0
WS MP-25B	79.8*

Plentywood, Montana

Chris - Check	77.2
WS MP-25B	80.8*



* Difference is statistically significant at the 5% level.

1/ Pounds 0.46% Ash Flour per cwt. wheat.

00020

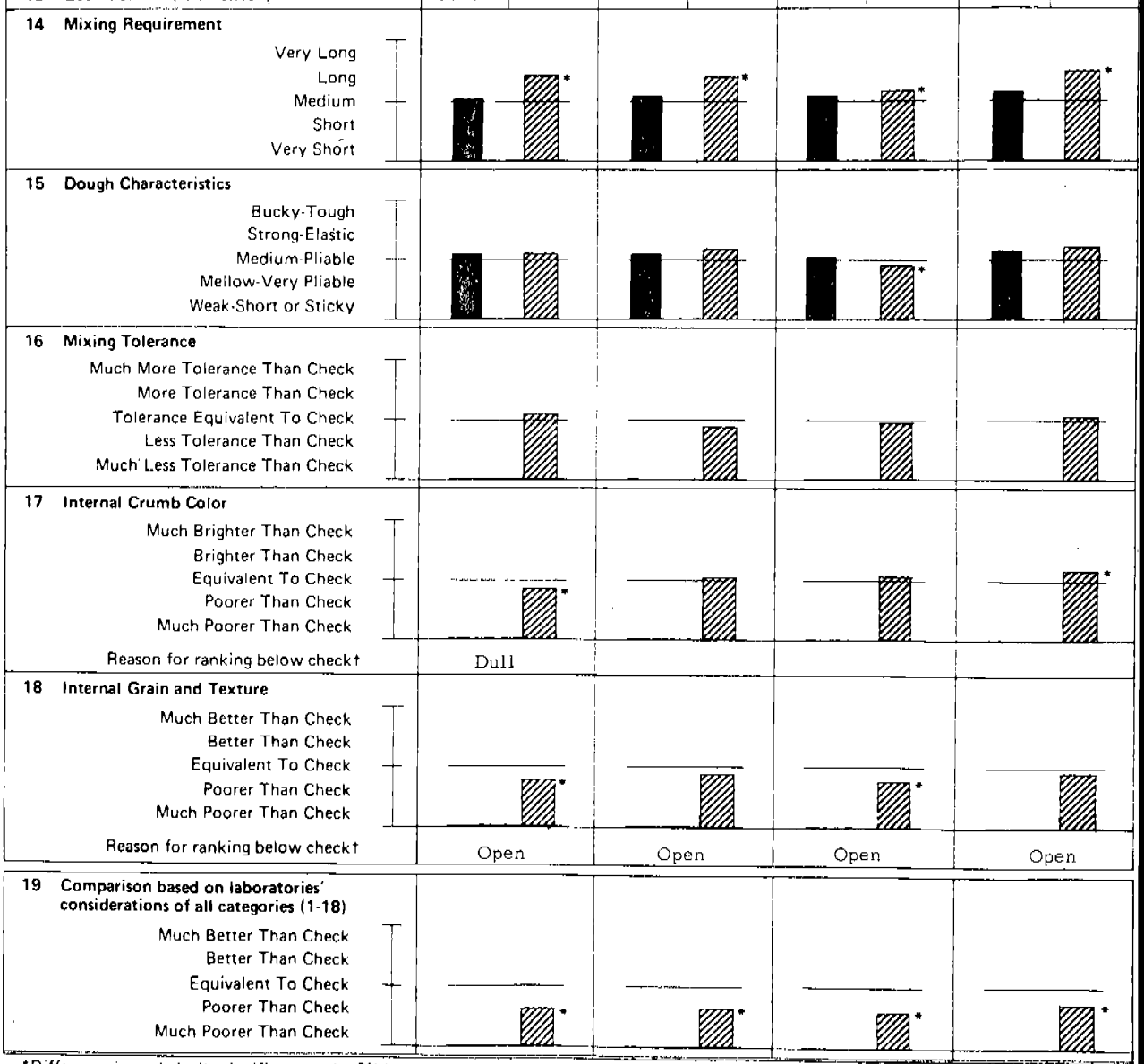
76TQ019

World Seeds MP - 25B

Chris - Check

1973 SUMMARY RESULTS OF COOPERATING LABORATORIES

Location	Crookston, Minn.		Casselton, N.D.		Minot, N.D.		Plentywood, Mont.	
Variety	Check	MP-25B	Check	MP-25B	Check	MP-25B	Check	MP-25B
1 Wheat Protein %	14.9	13.6*	15.0	13.1*	13.1	11.4*	14.8	13.2*
2 Flour Protein %	13.8	12.3*	13.9	12.0*	12.5	10.2*	13.7	12.0*
3 Test Weight	58.7	60.7*	59.6	66.0	61.8	62.4	60.7	62.0*
4 1000 Kernel Weight (Grams)	28.9	28.4	30.9	32.2	33.7	33.3	25.1	28.2*
5 % Large Kernels	31	4*	52	26	49	29*	3	2
6 % Small Kernels	1	4*	1	1	0	2*	3	3
7 Wheat Ash %	1.46	1.46	1.58	1.49*	1.50	1.41*	1.50	1.47
8 Flour Extraction %	68.1	70.9*	65.7	72.7*	63.6	70.3*	67.0	71.8*
9 Flour Ash %	.368	.389*	.369	.390*	.379	.354*	.332	.322
10 Pounds 0.46% Ash Flour per cwt. wheat	79.2	79.3	77.0	79.4*	79.0	79.8	77.2	80.8*
11 Farinograph: Absorption %	62.9	56.2*	63.5	56.2*	64.3	56.3*	62.5	56.9*
Arrival Time	3.2	2.1	3.5	2.6	3.0	1.0	3.2	1.8
Peak	6.0	8.8*	7.5	10.9*	6.5	8.2	6.8	11.3*
Stability	9.3	25.0*	10.8	20.6*	9.0	16.8*	9.5	22.2*
M.T.I.	30	10	35	20	30	20	40	10
12 Bake Absorption (14% M.B.)	63.9	59.2*	64.7	58.3*	64.9	58.4*	63.7	59.1*
13 Loaf Volume (% of Check)	100.0	91.7*	100.0	92.3*	100.0	91.4*	100.0	94.1*
14 Mixing Requirement								
15 Dough Characteristics								
16 Mixing Tolerance								
17 Internal Crumb Color								
Reason for ranking below check†	Dull							
18 Internal Grain and Texture								
Reason for ranking below check†	Open		Open		Open		Open	
19 Comparison based on laboratories' considerations of all categories (1-18)								



*Difference is statistically significant at the 5% level.
†Most frequently reported comment.

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76TQ019

1973 CROP QUALITY COUNCIL SAMPLES

World Seeds MP-25B

Milling Production Data

Variety	1 & 2 Midds	Flour	1st Cut-off	2nd Cut-off	Total Flour	% Flour	Tail Shorts	Head Shorts	Total Shorts	Bran	Total Feed	% Shorts In Feed
					% Extraction							
Crookston, Minnesota												
Chris-Check	17.2	68.1	8.0		76.1	89.4	4.2	9.4	13.6	10.4	24.0	56.7
WS MP-25B	20.5	70.9	4.4	1.4	76.7	92.4	7.2	5.6	12.8	10.5	23.3	54.9
Casselton, North Dakota												
Chris-Check	16.5	65.7	8.4		74.1	88.6	7.8	5.8	13.6	12.3	25.9	52.5
WS MP-25B	21.6	72.7	3.8	0.8	77.3	94.1	5.8	5.7	11.5	11.3	22.8	50.4
Minot, North Dakota												
Chris-Check	16.0	63.6	10.4		74.0	86.0	9.0	5.5	14.5	11.6	26.1	55.6
WS MP-25B	20.8	70.3	6.0		76.3	92.1	6.3	5.4	11.7	12.0	23.7	49.4
Plentywood, Montana												
Chris-Check	19.3	67.0	7.6		74.6	89.8	6.7	5.6	12.3	13.1	25.4	48.4
WS MP-25B	20.8	71.8	4.4	0.8	77.0	93.2	5.7	5.4	11.1	12.0	23.1	48.1
					% Ash(14% M.B.)							
Crookston, Minnesota												
Chris-Check	.31	.35	.69		.39		2.89	4.63		5.97		
WS MP-25B	.33	.39	.75	.90	.42		3.42	5.19		6.33		
Casselton, North Dakota												
Chris-Check	.32	.37	.75		.41		3.24	5.52		6.55		
WS MP-25B	.32	.39	.84	1.22	.42		3.92	5.37		6.59		
Minot, North Dakota												
Chris-Check	.31	.38	.62		.41		2.74	5.39		6.42		
WS MP-25B	.29	.35	.71		.38		3.30	4.82		6.10		
Plentywood, Montana												
Chris-Check	.28	.33	.74		.37		3.35	5.17		6.16		
WS MP-25B	.26	.32	.71	1.08	.35		3.55	5.08		6.48		
					% Protein (14% M.B.)							
Crookston, Minnesota												
Chris-Check	12.9	13.8	16.7		14.1		17.2	19.0		15.7		
WS MP-25B	11.9	12.3	16.3	13.7	12.6		17.2	17.7		15.9		
Casselton, North Dakota												
Chris-Check	13.2	13.9	17.4		14.3		17.2	18.3		15.4		
WS MP-25B	11.1	12.0	16.3	14.4	12.2		16.8	17.8		16.0		
Minot, North Dakota												
Chris-Check	11.9	12.5	14.3		12.8		14.8	16.5		13.8		
WS MP-25B	9.6	10.2	12.7		10.4		14.7	15.6		13.7		
Plentywood, Montana												
Chris-Check	12.8	13.7	17.1		14.0		17.1	17.8		15.8		
WS MP-25B	11.4	12.0	16.1	13.9	12.3		16.4	17.6		15.4		

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76TQ019
1975 DATA

Table 2. Agronomic data for World Seeds, Inc. wheats (Profit 75 and MP25B) and check varieties, Waldron, Era and Olaf, from the 1975 hard red spring wheat trial at North Dakota stations.

Station	Variety or line	Headed days	Ht. cm	Lodging score 0-9	% Rust Leaf	% Rust Stem	Leaf score 0-9	Test Wt. lbs/bu	Yield bu/A
Williston	Waldron	54	91	1	5MS	-	5.5	52.1	28.6
	Era	57	69	1		-	5.5	48.7	23.1
	Olaf	55	71	1	0	-	6.0	52.9	27.1
	Profit 75	54	77	1	0	-	6.0	51.1	25.4
	MP25B	53	71	1	0	-	6.5	51.6	24.6
								C.V.	9.0
								$L.S.D._{.05}$	3.3
Dickinson	Waldron	-	-	-	-	-	-	-	36.9
	Era	-	-	-	-	-	-	-	50.6
	Olaf	-	-	-	-	-	-	-	41.8
	Profit 75	-	-	-	-	-	-	-	36.9
	MP25B	-	-	-	-	-	-	-	43.2
								C.V.	9.6
								$L.S.D._{.05}$	5.4
Minot	Waldron	-	81	-	-	-	-	57.8	38.4
	Era	-	69	-	-	-	-	58.0	37.8
	Olaf	-	71	-	-	-	-	58.9	39.6
	Profit 75	-	63	-	-	-	-	58.8	27.9
	MP25B	-	64	-	-	-	-	58.9	38.2
								C.V.	12.9
								$L.S.D._{.05}$	6.6
Carrington dryland	Waldron	53	93	-	40MS	-	6	55.0	38.8
	Era	58	71	-	10MR	-		55.5	38.5
	Olaf	55	76	-	tMS	-	6	57.5	40.4
	Profit 75	54	68	-	10MR	-	8	55.5	38.2
	MP25B	54	71	-	10MS	-	8	56.0	42.1
								C.V.	7.9
								$L.S.D._{.05}$	4.3
Carrington irrigated	Waldron	49	96	0	10MS	-	8	57.5	47.5
	Era	57	77	0	tMS	-	7	58.0	45.0
	Olaf	53	84	0	tR	-	8	57.0	44.3
	Profit 75	52	82	0	tMS	-	8	58.0	58.8
	MP25B	52	78	0	5MS	-	8	58.5	60.9
								C.V.	10.4
								$L.S.D._{.05}$	7.3

Table 2. continued

Station	Variety or line	Headed days	Ht. cm	Lodging score 0-9	% Rust Leaf	% Rust Stem	Leaf score 0-9	Test Wt. lbs/bu	Yield bu/A
Langdon	Waldron	55	100	0	5MS	0	5	59.1	46.5
	Era	60	75	0	5MS	0	3	61.1	64.8
	Olaf	58	82	0	tMR	0	3	59.8	53.5
	Profit 75	56	82	1	0	0	7	59.5	56.0
	MP25B	57	81	0	0	0	6	59.5	56.6
								C.V.	5.5
								$L.S.D._{.05}$	3.9
Fargo	Waldron	49	86	1	5MR	0	8	58.3	33.9
	Era	53	76	2	5MS	0	5	60.2	43.3
	Olaf	51	74	1	tMR	0	5	60.5	37.6
	Profit 75	49	73	1	tMR	0	5	59.7	38.3
	MP25B	49	70	1	tMR	0	6	60.2	39.9
								C.V.	5.0
								$L.S.D._{.05}$	2.8